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PROGRESS REPORT

CURRENT SERIAL RECORDS

of the

ECONOMIC AND STATISTICAL ANALYSIS DIVISION

ECONOMIC RESEARCH SERVICE

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APR 29 1969

CURRENT SERIAL RECORDS

This progress report includes a summary of the current research of the Division and a preliminary report of progress made during the preceding year. It is primarily a tool for use of scientists and administrators in program coordination, development and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publication and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between October 2, 1967, and September 30, 1968. Current economic and statistical research findings are also published in the Outlook and Situation Reports, Agricultural Economics Research, and The Farm Index. This progress report was compiled in the Economic and Statistical Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D.C.

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INTRODUCTION

The Economic and Statistical Analysis Division has the responsibility for research directed toward (1) the identification and measurement of relationships among the factors affecting the demand, supply, and price of agricultural commodities; (2) identification and measurement of broad relationships between the farm economy and the national economy; (3) measurement and analysis of farm income and income of farm population; (4) measurement and analysis of demand for and consumption of food and other farm products, and long-run projections of economic growth and demand and prices; and (5) historical research relating to major developments in farming and major changes in policies, programs, and organizations of the Department.

Development and improvement of statistical data and development of new and improved methods of statistical analysis are integral parts of this process.

This research provides the information underlying the appraisals of the current and prospective economic situation for agriculture and agricultural commodities which are the heart of outlook work. It also provides the information required for analyses of the probable effects of alternative farm programs.

Economic and statistical analysis research is reported for the period October 2, 1967, through September 30, 1968. The research effort in the Economic and Statistical Analysis Division amounts to approximately 52 professional man-years.

Following are some of the recent research accomplishments of the Economic and Statistical Analysis Division.

Estimates of the personal income of the farm population from nonfarm sources for years since 1960 were revised upward on the basis of new benchmark data from the 1965 Sample Survey of Agriculture. These new benchmark data show a sharp upward trend in the percentage of farm families who receive income from nonfarm sources. In addition, the average amount of nonfarm income per family increased. As a result, aggregate net income of the farm population from nonfarm sources is estimated at \$10.7 billion in 1967. On a per capita basis disposable personal income of the farm population was estimated at \$2,037 in 1967. This was 73 percent of the comparable figure for nonfarm people.

The data from the 1965 Survey show that operator families of farms in all value-of-sales classes obtained substantial amounts of income from nonfarm sources. Wages and salaries are the most important source of off-farm income for farms in all value-of-sales classes. This source supplies

70 percent of total off-farm income. Other important sources include nonfarm business or professional practice, interest, dividends, and trust funds and social security, pensions, retirement pay, veterans payments and annuities.

An analysis of major patterns of food consumption, prices and expenditures since 1950 was completed. These patterns were analyzed in terms of inter-relationships between commodities and the effects of changes in income and population on food consumption. A publication, Food Consumption, Prices and Expenditures, reported this research as well as presenting updated historical data on food consumption since 1909.

An Economic Analysis of the Dynamics of the United States Wheat Sector was also published. This report summarizes an econometric analysis of the wheat industry in a dynamic or time setting. Examples of how the model can be used to make short-run and long-run projections for the wheat industry are presented. A significant part of the report develops and analyzes a general recursive dynamic economic model.

A full-scale review of the history of agricultural technical assistance abroad, carried out by the Agricultural History Branch, indicated that we may have found the solution to world famine, if we follow through with present and proposed programs. The work was used by Orville L. Freeman in writing his book, World Without Hunger.

Preparation of a book-length history of the Department of Agriculture, 1963-1968, for the Lyndon Baines Johnson Library, was assigned to the Agricultural History Branch. Research shows that the Department is helping farmers produce more per man-year than ever before. Under programs aimed at poverty, more people are being fed than in 1960, advances have been made in rural development, and the goal of rural-urban balance offers opportunities for the future.

SUPPLY, DEMAND AND PRICE ANALYSES
(RPA 506)

USDA and Cooperative Program

Location of Intramural Work	Commodity	Scientist :Man-years FY 1968
Washington, D. C.	: Food Grains	2.0
Washington, D. C.	: Feed	2.0
Washington, D. C.	: Livestock and Meat	4.5
Denver, Colorado	: Livestock and Meat	2.0
Washington, D. C.	: Dairy	2.0
Washington, D. C.	: Poultry and Eggs	2.0
Washington, D. C.	: Fats and Oils	2.0
Washington, D. C.	: Fruit and Tree Nuts	2.0
Washington, D. C.	: Vegetables and Potatoes	1.0
Washington, D. C.	: Cotton and Other Fibers	3.5
Washington, D. C.	: Wool and Mohair	1.5
Washington, D. C.	: Tobacco	2.0
:	Total	26.5

Problems and Objectives

Farmers, processors, distributors, policy officials, and others need continuing economic intelligence regarding supply, demand, and price prospects to aid them in making sound production and marketing decisions to help assure adequate, well-balanced supplies of food and fiber. To insure that the situation and outlook work is as accurate and precise as possible, continuing research is needed on supply response to price, effect of supplies on price, and the effect of changing demand on prices and income.

Specific Objectives:

1. Provide research needed for strengthening situation and outlook work.
2. Improve forecasts of future supply and demand prospects.
3. Appraise market situations and prospects to aid decision makers in making sound and profitable decisions.
4. Appraise current and proposed programs to aid officials in formulating agricultural programs and policies.
5. Develop and improve basic statistics for use in statistical and economic analysis.

Progress - USDA and Cooperative Programs

A. Food Grains

Emphasis in 1967 - 1968 was directed to the problem of declining wheat prices in the face of record crops and rising carryovers; and to appraisals of suggested policy and program alternatives for improving prices. Two special problem areas were the record large soft red winter wheat supply and the poor export potential for all wheat. As a result, work was directed toward estimating (1) the probable expansion in use of soft red wheat as feed and (2) its substitution for other classes in the milling industry. Attention was placed on the feasibility of substituting soft wheat for other classes in exports to countries receiving food aid.

With lower wheat prices and renewed interest in the price support loan program, studies were made to forecast price levels and loan activity from data available early in the marketing year. Work performed to date indicates that (1) the season average farm price in 1968/69 may be only slightly above the national average loan, and (2) the quantity of 1968 crop wheat placed under loan will be the largest since 1958, somewhat more than 400 million bushels. Other analytical work has centered around the relationship of wheat stocks in the major exporting countries and the price of one of the major wheats in world trade. It is planned to broaden this to cover a

number of wheats in world trade, particularly U.S. wheats and foreign competitors. Research to determine the factors associated with wheat feeding, on a wheat and feed-grain region basis, has shown only limited usefulness to date.

Study of a new price supporting mechanism, a commercial warehouse resale loan program, was carried out to assess its effectiveness and acceptability. Analyses of various alternative wheat allotment and diversion programs for 1969 were also conducted, the objective of which would be to bring supplies into better balance with demand and improve prices to producers.

Other special studies were made on (1) the export payment rate for durum wheat, (2) probable spring wheat production taking into account a new variety of wheat, (3) wheat production and income in the absence of a price support and allotment program and (4) evaluation of the International Grains Arrangement.

B. Feed

Two important changes have occurred in the feed grain picture in recent years. During 1960-66, supplies and Government stocks were reduced from burdensome levels, and prices increased. In 1967 and 1968 bumper crops increased supplies to relatively high levels, bringing lower prices to producers.

Favorable livestock/feed price relationships in 1968/69, however, are expected to stimulate increased domestic use, bringing supply and disappearance into closer balance than in 1967/68.

An analysis on trends and variations in corn yields over the past 50 years revealed: (1) No upward trend in yields during 1916-35, (2) moderate upward trend during 1935-51 and (3) a pronounced upward trend during 1951-65. Factors contributing to changes in the yield trends in these 3 periods included: (1) Unfavorable weather and low prices in the depression years, (2) hybrid seed, acreage reduction in the lower yielding areas and favorable prices during and following W.W. II, and (3) expanded use of fertilizer, increased plant population, weed and rootworm control and irrigation in western areas.

Hay production, pasture-feed conditions, number of roughage-consuming livestock and prices received by farmers were the most important factors associated with changes in hay prices during the past decade. Three estimating equations were developed from various combinations of these factors which statistically explained 85 to 95 percent of the change in price. The results indicate that a 10 percent increase in hay production or pasture-feed condition would be followed by a decline of about 10 percent in price. A 10 percent increase in roughage-consuming livestock increases the price by 10 to 12 percent. And a 10 percent increase in farm prices of beef cattle and dairy products brings a 5 percent increase in the hay price.

C. Livestock and Meat

In view of existing favorable feeding ratios and large supplies of feeder animals in late 1967 and early 1968, an analysis was made of the costs of feeding livestock to heavier weights. Efficiency of converting feed into meat declines as weights increase, often at an accelerated rate. As a result, feeding to heavier weight means substantially increased costs per pound of gain.

The relationship between cattle feeding and feed grain production was presented in an article published in August. Cattle feeders have doubled the number of fed cattle marketed since the mid-1950's--an average annual increase of 6 percent. The expansion, however, has varied substantially among areas. Marketings in the Southwest increased at the fastest annual rate--22 percent--while those in the Eastern Corn Belt gained at a relatively slow 4 percent.

An analysis of regional lamb production and marketing was presented in the October 1967, Livestock and Meat Situation. In general, the first of the season's spring lambs are marketed out of California and the Southwest in the early spring. Fat and feeder lamb marketings shift northward and eastward in late spring. Lambs from the higher elevations of the Mountain States are generally the last to move in volume and are shipped to slaughter or to feedlots in late summer and fall. Fed lambs from the Corn Belt and some areas in the West make up the bulk of slaughter supplies in late fall and winter.

A discussion of the stability in the inventory of cattle and calves on farms in recent years and its implications was included in the March issue of the Livestock and Meat Situation. Beef production has risen while the national herd has held rather constant, with declines in the dairy herd having been offset by increases in the beef herd. As a result, the beef calf crop has continued to rise and the feeder cattle supply appears adequate to support an expanding fed beef industry in the next few years.

Increased attention in the past year was focused on the demand for meat. Consumer incomes have been rising in recent years, but the increase in the first half of 1968 was above average. This, plus population growth, led to generally higher livestock prices, even though production of red meats ran above a year earlier during January-June 1968.

D. Dairy

Analyses were made of factors affecting milk production. Single-equation least-squares models were formulated for estimating milk output, cow numbers, and milk per cow. Preliminary results show milk production less responsive to changes in milk prices and more responsive to wage rates than formerly.

The dairy situation and outlook analysis in the past year has placed special emphasis on changes in commercial demand, especially for fluid milk. An analysis of substitute fluid milk products was made. From the Household Food Consumption Survey, a study of consumption patterns for dairy products from 1948 to 1965 was completed including the trends in skim and low-fat fluid milk sales. Because of increased government stocks of dairy products this year,

utilization of these holdings has been emphasized. Extensive and regular reports were made of import data and actions, the foreign dairy situation, and foreign dairy policies.

An analysis of the changes in incomes and size of commercial dairy farms compared data from the 1964 Census of Agriculture with 1959 information. Special analyses were made of changes in the number of dairy farms, milk cows, and milk sales by size of dairy herd.

Dairy Statistics, 1960-67, which contains revised dairy data starting with 1960, was published. Information for many key series starts with 1950. A description of governmental participation in fluid milk pricing and of State fair-trade practice regulations was completed and is being cleared for publication.

E. Poultry and Eggs

Poultry meat production has expanded substantially in recent years, although below year earlier levels in the first half of 1968. With further increases expected, special emphasis has been placed on analyses of the effect of changing levels of production of poultry, competing red meats, and changing income levels on the prices of poultry.

In addition, major attention was given to analyses of the short-run supply responses for poultry and eggs and the effect of changes in supply on price. Improved methods of forecasting supplies of each commodity have been developed and have been used to improve the outlook work.

F. Fats and Oils

Soybeans and soybean products again dominated considerations in fats and oils, because of their economic importance in both domestic and world markets and the growing concern regarding the drop in the rate of increase in soybean utilization. The rate of growth in total soybean use began to decline in 1966/67, due to keen competition from supplies of foreign commodities, primarily sunflower seed oil and relatively high soybean prices. This situation continued to prevail in 1967/68, so that the rate of expansion was only around 3 percent above the previous year. As a result, soybean stocks on September 1, 1968 were the highest on record. Also, despite P.L. 480 programs, soybean oil exports were down substantially from year-ago levels. However, soybean meal exports continued at a brisk pace, with smaller increases in domestic use.

In the November 1967 Fats and Oils Situation, a special article analyzed processing capacity trends in the soybean industry. During 1967/68, processing capacity expanded to an estimated 750 million bushels, but only about three-fourths of the capacity was utilized.

The September 1968 issue summarized a special USDA survey of the U.S. edible fats and oils refining industry. As of September 30, 1967, the maximum annual refining capacity of the industry was 12.7 billion pounds. Another 1.2 billion pounds was under construction, boosting the industry potential to 13.9 billion pounds. Most refiners also produce and pack finished products.

During October 1966-September 1967, the industry operated at about two-thirds of its estimated maximum annual capacity for refining, further processing and production of finished products. The refiners' packing rate was about one-half of its estimated maximum capacity.

An analysis of seasonal trends in the marketing and use of soybeans was carried in the June 1968 issue. Soybean crushings and exports reach seasonal highs in the fall, usually in November. The lows occur in September. Crushings continue at a relatively steady pace throughout the year, with about 8 percent of the year's total processed each month. However, exports vary considerably. Usually, by the end of the first four months of the crop year, a rough approximation of total use for the season can be projected.

G. Fruits

A comprehensive analysis of production, utilization and prices of Florida oranges was begun in 1968, with the objective of projecting these factors through 1980. Substantial progress has been made on projecting planted acreage through 1975 and bearing acreage, yield per acre, and production through 1980. Regression analysis has proved suitable for evaluating the relationships which determine the utilization mix among final products. However, no means have yet been found for projecting some of the variables on which utilization projections depend. Price estimation based on demand function analysis has been explored through regression techniques; but this approach has not proved completely satisfactory and further analysis of demand functions is necessary.

More comprehensive presentations were made in the Fruit Situation of data and analyses relating to processed citrus and noncitrus fruits. Emphasis was given to fresh fruit marketing, geographic distribution of fruit and nut production, and per capita consumption of fruit and tree nuts.

Expansion and refinement of historical data relating to processed citrus fruits and frozen noncitrus fruits has been started to upgrade capacity for current analyses and provide data for in-depth study of several commodity markets.

H. Vegetables and Potatoes

Long term prospects for production and utilization of vegetables and potatoes were given attention. Projections to 1980 suggest little change in per capita use of these foods, but total consumption will rise substantially because of population increases. The shift from fresh to processed use likely will continue. A contribution was made to a project sponsored by the Organization for Economic Cooperation and Development to analyze production and market prospects for horticultural crops important in world trade. For tomatoes, it was concluded that a relatively strong fresh market situation

would continue for some years, particularly in Europe. However, because of increased productive capacity, supplies of processed tomatoes will be relatively large, resulting in a depressed market. Studies are in process for several other leading vegetables.

More than usual efforts were required to revise consumption data for vegetables, potatoes, and sweetpotatoes because of changes in basic production data due to census revisions, and to changes in factors relating to equivalent fresh and processed weights. The overall effect of the revisions was a slight reduction in the rate of shift from fresh to processed. Still, during the last few years, canned and frozen vegetables accounted for more than half of total consumption.

I. Cotton and Other Fibers

A cooperative study, "Interfiber Competition and Trade With Emphasis on Cotton," was initiated with the University of California at Davis. Competition between fibers for major end-use markets is being analyzed through the use of new statistical approaches. Primary objectives of the study are to determine economic factors affecting use of major textile end-products, textile fibers in major end-uses, and fiber substitution in major textile end-products. The study will provide, among other things, a more detailed insight into the bases on which fibers compete for major end-products and implications of such competition for promotional expenditures and textile trade.

An article, "Cotton and Man-Made Fiber Fabric Blends," appeared in the January 1968 Cotton Situation. Broadwoven fabric blend production has increased in recent years. In 1965, blends accounted for about 20 percent of all fabrics produced compared with 14 percent in 1962. Polyester-cotton blends, in the ratios of 65/35 and 50/50, are mostly responsible. In contrast, production of 100 percent cotton fabric has declined in recent years and in 1965 represented 66 percent of total production, down from 72 percent in 1962.

Analysis continued on a study of the probable future demand for cotton by staple length. Data on mill use of cotton by major staple length has been published by the Bureau of the Census since January 1968. The data will be useful in determining relationships between the price and use for various staples, as well as providing a basis for identifying and analyzing trends. The data will be related to fabric output and to product demand. This final demand will be related to prices and other quality characteristics among the various staple lengths, as well as to competition with man-made fibers and consumer income.

For many years, supplies of cotton were in excess of utilization, and farm prices remained near loan levels. However, in 1967/68, supplies of some cottons, particularly the longer staples, tightened in relation to demand, and prices rose sharply. Analyses are underway on the role of prices for the various staple lengths on production and utilization of the various staples. Also, seasonal movements in cotton prices are being analyzed. Farm prices appear to follow a seasonal pattern, while spot market prices show less of a seasonal movement.

An analysis of the current and prospective supply of cotton by major staple length groupings was contained in the October 1967 Cotton Situation. Estimates of utilization by staple length for the 1967/68 crop year were made in the January 1968 Cotton Situation; and projections were made for August 1, 1968, stocks by staple length. Analyses indicated that the sharp rise in prices during 1967/68 for long-stapled cotton, in relation to the short staples, would cause a substantial shift by both domestic and foreign cotton mills to the short staples; and a substantial part of August 1, 1968, stocks were correctly forecast to be of the longer staples. With the 1968 crop below expected disappearance, cotton stocks may be moderately reduced this crop year. However, an analysis in the August 1968 Cotton Situation indicates that production of the longer staples will advance in 1968 and the supply of the various qualities will be in better balance with demand than last season.

J. Wool and Mohair

Projections to 1980 were made for most farm commodities, including wool. Production of wool in the United States is expected to decline further during the next few years, but may tend to increase by 1980. Wool prices were expected to become somewhat stronger with the anticipated rise in price levels of other goods and service. Projected apparel wool consumption largely followed the anticipated rise in population. Increased competition from man-made fibers likely will offset the effect of larger consumer incomes on demand, and little change was expected in per capita wool use.

World wool supplies during the last 2 years increased rather sharply because of increases in both production and stocks. Prices of wool in the United States and other countries declined. Several Free-World countries, including the United States, are cooperating in a program to improve data on the wool economy. A new series on quarterly mill consumption of wool in 10 major-manufacturing countries is one result. This series is adjusted for seasonality and will be published in future Wool Situation reports. Data on monthly marketings of U.S. shorn wool were developed for 1946-67.

World wool use increased about 2.9 percent per year in 1953-59, but little further increase occurred during the 1960's. Average annual rates of change also were developed for the 10 major manufacturing countries of the Free World; the Soviet Union, Eastern Europe, and China; and other countries.

Seasonality and cycles in mill use of raw wool were analyzed for the 10 major-manufacturing countries.

K. Tobacco

Changes in the tobacco situation in recent years have made it necessary to give increasing attention to the factors affecting overall tobacco use, both domestic and export. Particularly intensive analysis was made of domestic use of flue-cured tobacco and the reconciliation with the usual calculated disappearance and manufacturers' reported disappearance. A major factor in the 9-percent drop in flue-cured domestic disappearance during 1966/67 was the sharp increase in use of reconstituted tobacco sheet (as indicated by stock changes). Further stress was placed in the June and September issues of the Tobacco Situation on the impact on imports and exports of larger overseas supplies from non-traditional suppliers. The relatively high price of U.S. tobacco along with changes in manufacturing techniques have slowed down the rate of utilization of U.S. tobacco. The September Tobacco Situation analyzes the changes in the outlook for tobacco because of the 2 percent downturn in per capita cigarette consumption. Some users are apparently reacting to the smoking-health publicity. The June issue of the Situation carried an analysis of commercial tobacco farms based on the 1964 Census of Agriculture.

Publications - USDA and Cooperative Program

Food Grains

- Askew, W. R. Wheat Situation. Published four times a year. ERS, USDA. Washington, D. C.
- Askew, W. R. Rice Situation. Published annually. ERS, USDA. Washington, D. C.
- Gomme, F. R. March 1968. "Bulgur" The Wheat Situation, WS-203.
- Food Grains Staff. August 1968. "The International Grains Arrangement" The Wheat Situation, WS-205.

Feed

- Clough, Malcolm. Feed Situation. Published 5 times a year. ERS, USDA.
- Clough, Malcolm. February 1968. "Trends and Variations in Corn Yields Over the Past 50 Years." Feed Situation, pp. 28-32.
- Clough, Malcolm. May 1968. "Commercial Feed Sales Continue to Expand." Feed Situation, pp. 25-35.
- Ross, J. S. April 1968. "Hay Prices - Predicting Their Change." Feed Situation, pp. 23-28.

Livestock and Meat

- Seaborg, Donald. Livestock and Meat Situation. Published 6 times a year, ERS, USDA, Washington, D. C.
- Crom, Richard. February 1968. "Heavy Lamb Carcasses--Their Retail Value." Livestock and Meat Situation, pp. 33-35.
- Larsen, John. October 1967. "Regional Lamb Production and Marketing." Livestock and Meat Situation, pp. 21-23.
- Larsen, John and Rizek, Robert L. February 1968. "The Costs of Feeding To Heavier Weights." Livestock and Meat Situation, pp. 26-30.
- Larsen, John. August 1968. "Cattle Feeding and Feed Grain Production." Livestock and Meat Situation, pp. 26-30.
- Reierson, Robert. Western Livestock Round-Up. Published 12 times a year by cooperative Extension Services of various Western States, ERS, FES, and State Extension Services cooperating.
- Seaborg, Donald. November 1967. Outlook For Livestock and Meat in 1968, Speech, 45th Annual Agricultural Outlook Conference, Washington, D.C.
- Seaborg, Donald. February 1968. "Hog Output: Little Change From Last Year." Agricultural Situation, p. 6.
- Livestock and Meat Staff. June 1968. Livestock and Meat Statistics. Supplement for 1967 to Statistical Bulletin No. 33, pp. 159.

Dairy

- Mathis, A. G. Dairy Situation, published 5 times a year, ERS, USDA, Washington, D. C.
- Mathis, A. G. Dairy Statistics, 1960-67, ERS, USDA, Statistical Bulletin 430, Washington, D. C., 118 pp.
- Mathis, A. G. January 1968. "Over Half of Milk Supplies in 1967 Used in Manufactured Dairy Products." Farm Index, p. 15.
- Mathis, A. G. April 1968. "Up Last Year, U.S. Milk Production Running Below Average in Early '68." Farm Index, p. 4.
- Miller, Robert R. November 1967. "Consumption Patterns for Dairy Products in 1965, with Changes from 1948 and 1955." Dairy Situation, pp. 30-36.
- Miller, Robert R. July 1968. "Incomes on Commercial Dairy Farms." Dairy Situation, pp. 29-34 (reprinted as ERS-385, ERS, USDA, July 1968, 6 pp.).
- Miller, Robert R. August 1968. "Census Statistics Paint a Portrait of Nation's Commercial Dairyemen." Farm Index, p. 6.
- Miller, Robert R. September 1968. "Changing Patterns of Fluid Milk Sales." Dairy Situation, pp. 24-27.
- Moede, Herbert H. May 1968. "Substitute Fluid Dairy Products." Dairy Situation, pp. 30-37 (reprinted as ERS-381, ERS, USDA, 1968, 8 pp.).

Poultry and Eggs

- Hester, O. C. Poultry and Egg Situation, published 5 times a year.

Fats and Oils

- Kromer, George W. Fats and Oils Situation, published 5 times a year, ERS, USDA, Washington, D. C.
- Kromer, George W. November 1967. "U.S. Soybean Processing Capacity Continues Expansion." Fats and Oils Situation, pp. 35-39.
- Kromer, George W. January 1968. "The U.S. Castor Oil Situation." Fats and Oils Situation, pp. 23-31.
- Kromer, George W. April 1968. "The U.S. Coconut Oil Situation." Fats and Oils Situation, pp. 26-33.
- Kromer, George W. June 1968. "Soybeans: Seasonal Trends in Marketings and Use." Fats and Oils Situation, pp. 22-28.
- Kromer, George W. and Gazelle, Stanley A. September 1968. "U.S. Edible Fats and Oils Refining Capacity, 1967." Fats and Oils Situation, pp. 24-34.
- Fats and Oils Staff. January 1968. "FOS Readers Survey." Fats and Oils Situation, pp. 32-34.

Fruit and Tree Nuts

- Brader, C. R. Fruit Situation. Published 4 times a year. ERS, USDA. Washington, D. C.

Vegetables and Potatoes

- Kuryloski, D. S. Vegetable Situation, published quarterly. ERS, USDA. Washington, D. C.

Cotton and Other Fibers

- Donald, James R. Cotton Situation. Published 5 times a year. ERS, USDA. Washington, D. C.
- Barlowe, Russell G. January 1968. "Cotton and Man-Made Fiber Fabric Blends." Cotton Situation, pp. 13-18.
- Cotton and Other Fibers Staff. March 1968. Statistics on Cotton and Related Data, 1930-67. ERS, USDA. Statistical Bulletin No. 417.

Wool and Mohair

- Clayton, L. B. Wool Situation. Published quarterly. ERS, USDA. Washington, D. C.
- Clayton, L. B. May 1968. Supplement for 1967 to Wool Statistics and Related Data, 1920-64. ERS, USDA. Washington, D. C.

Tobacco

Sackrin, S. M. and (beginning June 1968) Miller, Robert H. Tobacco Situation, published quarterly. ERS, USDA, Washington, D. C.

Miller, Robert H. June 1968. Tobacco Farm Income by Value of Sales Class. Tobacco Situation, pp. 43-47.

Miller, Robert H. July 22, 1968. "Estimating Domestic Tobacco Use Through Regression Methods." Paper presented at the 22nd National Tobacco Workers Conference at Asheville, North Carolina. 12 pp.

FARM INCOME

USDA and Cooperative Program

Location of Intramural Work	Scientist Man-Years F.Y. 1968			
	Research Problem Area			
	506	807	808	Total
Washington, D. C.				
Estimates of farm income and expenditures, and income of farm people	5.0			5.0
Income estimates analysis and development	0.5	0.5		1.0
Relationships between agriculture and other sectors of the economy	1.5			1.5
Analysis of the impact of alternative farm programs on agriculture and the general economy			1.5	1.5
Centralization and maintenance of economic data pertaining to agriculture	2.0			2.0
Total	9.0	0.5	1.5	11.0

Program is entirely intramural.

Problems and Objectives

Timely and accurate statistical information and analyses of the farm income situation and outlook are essential to the development of production and marketing plans and in evaluation of public programs for agriculture. Changes in agriculture require the development of new methods and sources of data to improve the representativeness of farm income data. Quantification of the interrelationships between agriculture and other sectors of the economy are needed for assessing the impact of changes in the farm sector on related nonfarm sectors and vice versa. Centralization of a large number of economic time series pertaining to agriculture is required to facilitate prompt handling of a continuous flow of diverse requests for economic data on agriculture.

Major objectives of farm income research are:

1. Develop and maintain accurate, timely measure of changes in farm income and incomes of farm people.
2. Develop and maintain meaningful measures of the parity returns position of farmers.
3. Develop annual distributions of farms and farm income by value-of-sales classes.
4. Develop and improve quantitative measures of the interrelationships between agriculture and other sectors of the economy.
5. Facilitate analysis of the effects of farm programs and policies on farm income.

Progress - USDA and Cooperative Programs

A. Current estimates of farm income and expenditures

Realized net farm income during the first half of 1968 was estimated at \$14.6 billion, seasonally adjusted annual rate, just above the rate a year earlier. A continued rise in the cost of operating the farm business almost offset an increase in realized gross income during January-June 1968. A late summer appraisal of production, marketing, price and cost prospects for the remainder of 1968 points to a realized net farm income for the year around \$15 billion, compared with the \$14.2 billion realized in 1967.

Realized gross farm income in 1967 was \$49.1 billion, exceeded only by the record \$49.6 billion of 1966. Total cash receipts from farming were \$45.9 billion, down slightly from the 1966 level as both marketing receipts and direct government payments were lower.

Farm production expenses last year showed a larger-than-usual increase due mainly to inflationary pressures in the economy. The estimated total,

\$34.8 billion, was some \$1.4 billion higher than in 1966. This sharp rise in production expenses coupled with a decline in realized gross income in 1967 resulted in a \$2 billion decline in realized net income from the near-record level of 1966. However, with the exception of 1966 the \$14.2 billion realized net income in 1967 was the highest since 1951.

Realized net income per farm in 1967 was \$4,526, second highest on record, down about \$500 from the 1966 average. The decline in per farm realized net last year was general through the country with only about 10 States showing either an increase or virtually no change from 1966 estimates.

Estimates of the personal income of the farm population from nonfarm sources were revised sharply upward on the basis of data from the 1965 Sample Survey of Agriculture. The new estimates show that the disposable per capita income of farm people from all sources in 1967 was \$2,037, compared with \$1,976 in 1966 and \$1,100 in 1960. This disposable personal income per capita of the farm population in 1967 was 73 percent of the comparable average for nonfarm people, down slightly from the record ratio of 75 percent in 1966 but substantially above the 55 percent estimated for 1960.

For the first time, published farm income estimates from 1960 forward are on a 50 state basis including Alaska and Hawaii. This puts these series on a par with most other major statistical series of the Federal Government.

State tables on farm income and related data were in heavy demand during the reporting period. State tables were prepared comparing 1967 farm income with 1960 and 1961-67 averages with those of 1957-60, and recent farm prices with prices in 1960. These tables also contained distributions of farms by economic class for 1964, and other specified data on farmers' incomes and financial position.

Several studies were completed during the reporting period to assist PEPS to appraise the effect of alternative production, price, and payment programs on farm income in future years. This included a study assuming a free market for farmers during 1961-67 rather than the voluntary programs and other conditions actually prevailing.

B. Research and methods relating to farm income

1. Development of estimates of income of farm operator families by value of sales classes. Distributions of number of farms, farm income and expenses, and off-farm income of farm operator families by value of sales classes (1960-66) were revised and the series extended through 1967. The new data were published in the July 1968 Farm Income Situation and supersede estimates published earlier. Current distributions are different from those published

previously because they now cover 50 States and they incorporate new information from the 1964 Census of Agriculture and the 1965 Sample Survey of Agriculture.

In 1967, there were 500,000 large farms (those with value of sales of \$20,000 or more). These farms made up 16 percent of all farms in 1967 and they received 68 percent of cash receipts from farming. Realized net income averaged \$14,892 per farm. At the opposite end of the scale were 1,347,000 farms with value-of-sales of less than \$2,500. Although these farms constituted 43 percent of all farms, they received only 3.4 percent of cash income from farming. Realized net income averaged \$1,018 per farm.

Operator families on all sizes of farms received substantial amounts of income from off-farm sources. Operator families on large farms averaged \$3,669 in income from off-farm sources. On farms in the under \$2,500 value-of-sales class, operator families averaged \$5,681 in off-farm income. Operator families on the larger farms received 20 percent of their income from sources other than their own farms. On the smallest farms, off-farm income made up 85 percent of the operator family income from all sources.

Projections of distributions of number of farms and farm income by value-of-sales classes were made for the Planning, Evaluation and Programming Staff of the Department. The aggregate income projections on which the distributions were based involved assumed production, prices, and government payments for major price support commodities.

Detailed plans were developed for tabulation of data on farm assets, income and expenditures which were collected in conjunction with the 1966 Pesticide Survey. The tabulations are expected to be completed by mid-summer 1969.

A contract has been signed with Internal Revenue Service to prepare tabulations of farm income and farm production expenses by value-of-sales from the tax returns of farm operators. The data are to be tabulated from 1968 tax returns and are to be available before the end of the 1970 fiscal year.

2. Measurement and analysis of relationships between Agriculture and other segments of the economy. Preparation of preliminary estimates of inter-industry sales and purchase transactions between Agriculture and the other sectors of the U. S. economy in 1963 have been completed. These data will constitute the agricultural sector of complete input-output of the United States for 1963. This project is part of a cooperative program, coordinated by the Department of Commerce. The first complete transaction table developed under this program was for 1958. There is considerably more industry detail in the 1963 model than was true for 1958. For example, ten agricultural industries are shown compared with only two for 1958.

The design of the table and the accounting concepts and conventions used in tracing the direct flow of goods and services throughout the economy makes it possible to use this information to measure direct and indirect relationships between each of the industries and final consuming sectors.

C. Analysis of the impact of alternative farm programs on agriculture and the general economy.

The statistical measurements of parity returns reported last year in "Parity Returns Positions of Farmers," published by the 90th Congress in Senate Document No. 44 were revised and extended to 1967. The new measurements covering the "landlord" and "stockholder" standards for farms by value of sales classes are consistent with revised sales class data published in the July 1968 Farm Income Situation.

Compared to the "landlord" standard, excluding capital gains, returns from farming in 1967 ranged from 92 percent of parity returns for farms with value of sales of \$20,000 or more to 44 percent for farms with \$5,000-\$9,999 value of sales. On the basis of the average for all farms, returns from farming were 66 percent of parity returns. This was down from 78 percent in 1966. All value-of-sales classes had lower percentages of parity returns in 1967.

D. Centralization and maintenance of economic data pertaining to agriculture.

The presidential campaign, the decline in net farm income in 1967, and rising food costs have added to the requests for information from the general public, officials of the Department and offices of Congressmen and congressional committees.

The Statistical Services Section continued to prepare and circulate a loose-leaf handbook providing current statistical information. Distribution is made to approximately 130 policymakers in the Department and other high-ranking officials.

Charts, tables, and graphs were provided for use in publication or special reports. Major contributions of statistical data were made to the Economic Report of the President, Agricultural Statistics, the Statistical Abstract of the U.S., the Congressional Committee print Food Costs - Farm Prices. Non-governmental publications supplied data include the World Almanac, Readers Digest Almanac, Moody's Government Manual, and the Stateman's Yearbook.

Charts were provided for the Handbook of Agricultural Charts and the outlook presentation to the Agriculture Subcommittee of the Appropriations Committee. Data were supplied for updating two popular publications of the Office of Information--Background on U.S. Agriculture and Background on Food Prices.

The Section continued to prepare a table of daily market prices for specified agricultural products, and weekly prices for several agricultural products in the National Stockpile for distribution to officials of the Department.

Publication - USDA

The Farm Income Situation, published in November, February, April and July.

FIS 208-211, 11-75 pp.

Farm Income State Estimates 1949-1967, Supplement to the FIS 211.

September 1968. 135 pp.

Randall, C. Kyle. May 1968. "'Realized' Farm Income: An Outmoded Concept?"

Am. J. of Agr. Econ., Vol. 50, No. 2. pp. 430-432.

ECONOMIC OUTLOOK, CONSUMPTION AND LONG-RUN PROJECTIONS

USDA and Cooperative Program

Location of Intramural Work	Scientist Man-Years FY 1968		
	Research Problem Area		Total
	506	808	
Washington, D. C.			
Domestic and foreign demand for agricultural products and the agricultural outlook	2.5		2.5
Long-run aggregate supply and demand for livestock and products, feeds and other field crops	1.0		1.0
Long-run projections of agricultural supplies, utilization, prices and income	0.5		0.5
Analysis of long-run implications of alternative farm programs		1.0	1.0
Estimation and analysis of food supplies, consumption and prices	2.0		2.0
Supply and utilization indexes of all farm commodities	0.5		0.5
Analysis of changes in the demand for food	1.5		1.5
Total	8.0	1.0	9.0

There was no extramural support of this work.

Problems and Objectives

Rapid changes and developments in agriculture require continuing collection and analysis of agricultural data. Objectives of this program are to provide information on the current economic situation outlook as it relates to agriculture and the rest of the economy and foreign trade; food consumption and trends in food consumption patterns; long-run projections for food and agriculture; and implications of alternative farm policies on agricultural production, prices, and incomes.

Specific objectives of the work are:

1. Development of data frameworks for summarizing the general agricultural and food situation.
2. Statistical analyses to identify the demand for foods and other farm products.
3. Development of econometric models to forecast the supply demand and prices of farm products and farm income.
4. To provide timely analysis of the current agricultural situation and outlook for farmers, businessmen, administrators, and other public officials.

Progress

A. Demand Analysis and Agricultural Outlook

Numerous developments in the general economy were analyzed with respect to their effect on the demand and supply of farm products, prices received and paid by farmers, and the general agricultural situation and outlook. Beginning this year, short-term forecasts of the general economy and agriculture (for the next 12 to 18 months) have been made on a quarterly basis. One example of this short-term forecast in July was an estimate of the influence that the 10% income tax surcharge would have on incomes during the rest of 1968, and the first half of 1969.

Appraisals of the current situation were also made of (1) increases in wages and corporate profits and other cost-price factors; (2) reduction in proposed Federal spending; (3) the impact of the prevailing high personal savings rate on consumer expenditures; (4) availability of mortgage funds for residential construction activity; (5) the fall in utilization of plant capacity and various levels of expenditures for new plant and equipment; (6) the gold crisis, the decline of the U.S. merchandise trade surplus, and the balance of payments problem and other current economic problems. In the agricultural sector, a number of important interrelated economic variables were analyzed. For example, what would be the effect of a slowdown in economic activity on farm prices and incomes? What influence are low feed prices expected to have on livestock output next year? Will prices paid by farmers increase more slowly next year?

Statistical analyses and frameworks were further developed to explain changes in business conditions, employment, consumer incomes, and the demand for farm products. Work has begun in incorporating recent information into existing models and to develop a more comprehensive model for the general economy.

Work is under way on developing short-term supply and demand forecasting models for major livestock and products. Preliminary output from these analyses is currently being incorporated in the quarterly forecasts of the general agricultural situation.

B. Supplies and Utilization of Food and Other Agricultural Products

The long-term program of measurement and appraisal of the supply and consumption of foods was continued. Per capita food consumption indexes were published for the major food products and for total food. Food consumption trends and patterns, retail food price movements, changes in food expenditures, and foreign trade in food products were evaluated quarterly. Short-run outlook for these facets of food consumption were published in the National Food Situation.

Preparation of up-to-date supply and utilization tables for the major food products was continued. These tables provide the primary basis for calculation of per capita food consumption indexes and the index of supply and utilization of all farm commodities. The internally distributed tables carried forecasts through 1968. The index of supply and utilization of farm commodities was calculated in detail; summary tables were published in the National Food Situation and Agricultural Statistics. A review of the basic methodology that underlies this set of index numbers was continued. Progress was made in programming this index for computer calculation and printing of summary tables.

Numerous analyses of retail food prices were made. In addition to regularly published forecasts, special reports were made frequently at the request of Department officials. Forecasting methods were refined by the use of statistical models. Progress was made on estimating and analyzing quarterly and regional per capita food consumption.

Analyses of prices, supplies and demands for sugar and other sweeteners and for coffee, tea, cocoa and other tropical products were continued.

Some tabulations from the 1965-66 Household Food Consumption Survey were received and analysis was initiated. Work was started on the construction of a price-weighted consumption index and on a comparison with time-series disappearance data. Household Food Consumption Survey data also were used to estimate possible increases in demand for food by low-income households.

Tables and charts on food consumption, prices and expenditures were prepared for the 1967 Handbook of Agricultural Charts. Per capita food consumption tables were prepared for Agricultural Statistics and the Statistical Abstract of the United States. Food consumption balance sheets were prepared for FAO and OECD. Various statements on developments in food consumption were prepared for the Family Economics Review and the Farm Index.

C. Long-run Agricultural Projections

Several analyses were made on the expected impacts of alternative farm programs. Estimates of total feed use were made considering alternative prices for feed grains and livestock. Both an annual model and a recently developed quarterly econometric model were used for projection of feed grains use.

An econometric analysis of the United States tung oil sector was initiated and has been largely completed. Preliminary results indicate that tung oil will continue to face strong competition from substitute products and there will likely be no great expansion in the demand for this product.

Along with other personnel in the Economic Research Service, an evaluation of the impact of no price support programs for the period 1961 through 1967 was made. The study concluded that total farm income would have been about 35 percent less than the actual income if there had been no programs during this period.

Five-year projections of the quantities and prices of major agricultural commodities were made for planning and programming work of the Department.

A reappraisal of the outlook for agriculture through 1980 has been initiated. This will include an intermediate analysis through 1973 and a longer-run analysis for 1980.

The work on econometric models for projecting livestock production, prices and feed grain use is being continued. Work is being continued on an analysis to explore the capacity of U.S. agriculture through the use of presently idle land, increasing the intensity of present land use, and the addition of new agricultural lands through irrigation and other land modification practices. Work also has recently been initiated on an analysis of the long-run structure of the United States rice sector.

Publications - USDA

Demand Analysis and Agricultural Outlook

Demand and Price Situation. Published quarterly.

Feb. 8, 1968. The 1969 Agricultural Budget in Brief. Demand and Price Situation.

Supplies and Utilization of Food and Other Agricultural Products

National Food Situation. Published quarterly.

Friend, Berta. 1967. Nutritional Review. National Food Situation, No. 122, pp. 30-35.

Eklund, Helen. 1967. Grocery Store Sales in 1965-66. National Food Situation, No. 122, pp. 36-37.

LeBovit, Corinne. 1967. Household Use of Food, 1955-65. National Food Situation, No. 122, pp. 38-41.

LeBovit, Corinne. 1967. Expenditures for Food Away From Home. National Food Situation, No. 122, pp. 42-48.

Gray Frederick D. 1968. Population and Food Consumption. National Food Situation, No. 123, pp. 24-26.

Hiemstra, S. J. 1968. Importance of Foreign Trade in Agricultural Commodities. National Food Situation, No. 124, pp. 31-35.

Hiemstra, S. J. 1967. Consumption, Prices and Expenditures for Food. Annual Agricultural Outlook Conference, Washington, D.C.

LeBovit, Corinne. 1967. Expenditures for Food Away From Home. Annual Agricultural Outlook Conference, Washington, D. C.

Hiemstra, S. J. 1968. Food Consumption, Prices, Expenditures. Agricultural Economic Report No. 138. 192 pp.

Long-Run Agricultural Projections

Mo, William Y. 1968. An Economic Analysis of the Dynamics of the United States Wheat Sector. Technical Bulletin No. 1395. Economic Research Service, USDA. 56 pp.

AGRICULTURAL HISTORY
(RPA 807)

USDA and Cooperative Program

Location of Intramural Work	Scientist Man-Years FY 1968
Washington, D. C.	
Service work on the history of agriculture	2.0
History of Department policies, organization, and administration	3.0
History of production adjustment, price support and related programs	1.0
Total	6.0

Intramural program is supplemented by extramural support representing 0.2 SMY's at State Agricultural Experiment Stations.

Problems and Objectives

Historical research on major developments in farming and major changes in policies, programs, and organization of the Department of Agriculture provides a background for understanding current agricultural problems, for developing governmental programs aimed at solving these problems, and for developing a wider understanding of the past achievements of agriculture and the Department.

Major objectives of the research are to provide some of the basic information needed by the Secretary of Agriculture, advisory committees appointed by the Secretary of Agriculture, Executive Offices of the President, presidential commissions, and the Congress in formulating and evaluating agricultural programs and policies, and to assist the scholarly community in its studies of agricultural development and farm policies.

Progress - USDA and Cooperative Programs

A. Development of Agriculture in the United States

In cooperation with the University of California, Davis, a program is under way to make available to scholars the material field in the Bibliographic Index to American Agricultural History. During the year, three additional sections of the index were published. These covered the history of the Granger movement, agriculture in California, and agriculture in the Pacific Northwest and Alaska.

B. History of USDA Programs and Organization

1. History of technical assistance. A full-scale review of the history of agricultural technical assistance abroad indicated that we may have found the solution to world famine, if we follow through with present and proposed programs. The work was used by Orville L. Freeman in writing his book, World Without Hunger.

2. Presidential history. Research for the book-length history of the Department of Agriculture, 1963-1968, for the Lyndon Baines Johnson Library, shows that the Department is helping farmers produce more per man-year than ever before. Under programs aimed at poverty, more people are being fed than in 1960, advances have been made in rural development, and the goal of rural-urban balance offers opportunities for the future.

3. Staff studies. Staff studies were prepared on several aspects of Department administration for the use of the Administrator and Office of the Secretary.

C. History of Production Adjustment, Price Support and Related Programs

Research in this area has been concentrated on the period 1963-1968, in connection with the Presidential history. The study indicates that income per farm has been maintained, even though prices of major commodities have declined. A major change in the direction of price supports has taken place. The former compulsory programs with high levels of support are giving way to voluntary programs with lower supports and payments.

Publications - USDA and Cooperative Program

Development of Agriculture in the United States

- Nordin, D. S. 1967. A Preliminary List of References for the History of the Granger Movement. 21 pp.
- Olsen, M. L. 1968. A Preliminary List of References for the History of Agriculture in the Pacific Northwest and Alaska. 58 pp.
- Rasmussen, W. D. 1967. Food for the Future. Technology in Western Civilization. 2:414-427.
- Rasmussen, W. D. 1967. Scientific agriculture. Technology in Western Civilization. 2:337-353.

History of USDA Programs and Organization

- Wiser, V. 1967. Erie Locke: A Forgotten Superintendent of Agriculture. Agr. Hist. 41:405-406.